SEQUENCE LISTING

<110> CALIFORNIA INSTITUTE OF TECHNOLOGY
COPE, Gregory
VERMA, Rati
ARAVIND, L
KOONIN, Eugene
DESHAIES, Raymond

<120> REGULATION OF TARGET PROTEIN ACTIVITY THROUGH MODIFIER PROTEINS

<130> CIT1510-4

<150> US 60/261,314
<151> 2001-01-12

<150> US 60/322,322
<151> 2001-09-14

<150> US 60/322,030
<151> 2001-09-14

<160> 22

<170> PatentIn version 3.1

<210> 1
<211> 14
<212> PRT
<213> Artificial sequence

<220>
<223> JAM domain

<220>
<221> MISC_FEATURE
<222> (1)..(14)
<223> Xaa is any amino acid

<400> 1

His Xaa His Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp
1 5 10

<210> 2
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> JAM domain

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa is Tyr or Ile

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa is Ser or Thr

<220>
<221> MISC_FEATURE
<222> (8)..(16)
<223> Xaa is any amino acid

<400> 2

Gly Trp Xaa His Xaa His Pro Xaa Xaa Xaa Xaa Xaa Xaa Ser Xaa Xaa
1 5 10 15

Asp

<210> 3
<211> 246
<212> PRT
<213> Homo sapiens

<400> 3

Thr Met Ile Ile Met Asp Ser Phe Ala Leu Pro Val Glu Gly Thr Glu
1 5 10 15

Thr Arg Val Asn Ala Gln Ala Ala Ala Tyr Glu Tyr Met Ala Ala Tyr
20 25 30

Ile Glu Asn Ala Lys Gln Val Gly Arg Leu Glu Asn Ala Ile Gly Trp
35 40 45

Tyr His Ser His Pro Gly Tyr Gly Cys Trp Leu Ser Gly Ile Asp Val
50 55 60

Ser Thr Gln Met Leu Asn Gln Gln Phe Gln Glu Pro Phe Val Ala Val
65 70 75 80

Val Ile Asp Pro Thr Arg Thr Ile Ser Ala Gly Lys Val Asn Leu Gly
85 90 95

Ala Phe Arg Thr Tyr Pro Lys Gly Tyr Lys Pro Pro Asp Glu Gly Pro
100 105 110

Ser Glu Tyr Gln Thr Ile Pro Leu Asn Lys Ile Glu Asp Phe Gly Val
115 120 125

His Cys Lys Gln Tyr Tyr Ala Leu Glu Val Ser Tyr Phe Lys Ser Ser
130 135 140

Leu Asp Arg Lys Leu Leu Glu Leu Leu Trp Asn Lys Tyr Trp Val Asn
145 150 155 160

```
Thr Leu Ser Ser Ser Ser Leu Leu Thr Asn Ala Asp Tyr Thr Thr Gly
                  165                 170                 175

Gln Val Phe Asp Leu Ser Glu Lys Leu Glu Gln Ser Glu Ala Gln Leu
            180                 185                 190

Gly Arg Gly Ser Phe Met Leu Gly Leu Glu Thr His Asp Arg Lys Ser
        195                 200                 205

Glu Asp Lys Leu Ala Lys Ala Thr Arg Asp Ser Cys Lys Thr Thr Ile
    210                 215                 220

Glu Ala Ile His Gly Leu Met Ser Gln Val Ile Lys Asp Lys Leu Phe
225                 230                 235                 240

Asn Gln Ile Asn Ile Ser
                245
```


<210> 4
<211> 245
<212> PRT
<213> Homo sapiens

<400> 4

```
Thr Val Arg Val Ile Asp Val Phe Ala Met Pro Gln Ser Gly Thr Gly
1               5                   10                  15

Val Ser Val Glu Ala Val Asp Pro Val Phe Gln Ala Lys Met Leu Asp
            20                  25                  30

Met Leu Lys Gln Thr Gly Arg Pro Glu Met Val Val Gly Trp Tyr His
        35                  40                  45

Ser His Pro Gly Phe Gly Cys Trp Leu Ser Gly Val Asp Ile Asn Thr
    50                  55                  60

Gln Gln Ser Phe Glu Ala Leu Ser Glu Arg Ala Val Ala Val Val Val
65                  70                  75                  80

Asp Pro Ile Gln Ser Val Lys Gly Lys Val Val Ile Asp Ala Phe Arg
                85                  90                  95

Leu Ile Asn Ala Asn Met Met Val Leu Gly His Glu Pro Arg Gln Thr
            100                 105                 110
```

```
Thr Ser Asn Leu Gly His Leu Asn Lys Pro Ser Ile Gln Ala Leu Ile
        115                 120                 125

His Gly Leu Asn Arg His Tyr Tyr Ser Ile Thr Ile Asn Tyr Arg Lys
    130                 135                 140

Asn Glu Leu Glu Gln Lys Met Leu Leu Asn Leu His Lys Lys Ser Trp
145                 150                 155                 160

Met Glu Gly Leu Thr Leu Gln Asp Tyr Ser Glu His Cys Lys His Asn
                165                 170                 175

Glu Ser Val Val Lys Glu Met Leu Glu Leu Ala Lys Asn Tyr Asn Lys
            180                 185                 190

Ala Val Glu Glu Glu Asp Lys Met Thr Pro Glu Gln Leu Ala Ile Lys
        195                 200                 205

Asn Val Gly Lys Gln Asp Pro Lys Arg His Leu Glu Glu His Val Asp
    210                 215                 220

Val Leu Met Thr Ser Asn Ile Val Gln Cys Leu Ala Ala Met Leu Asp
225                 230                 235                 240

Thr Val Val Phe Lys
                245
```


<210> 5
<211> 421
<212> PRT
<213> Homo sapiens

<400> 5

```
Met Pro Asp His Thr Asp Val Ser Leu Ser Pro Glu Glu Arg Val Arg
1               5                   10                  15

Ala Leu Ser Lys Leu Gly Cys Asn Ile Thr Ile Ser Glu Asp Ile Thr
            20                  25                  30

Pro Arg Arg Tyr Phe Arg Ser Gly Val Glu Met Glu Arg Met Ala Ser
        35                  40                  45

Val Tyr Leu Glu Glu Gly Asn Leu Glu Asn Ala Phe Val Leu Tyr Asn
    50                  55                  60

Lys Phe Ile Thr Leu Phe Val Glu Lys Leu Pro Asn His Arg Asp Tyr
65                  70                  75                  80
```

```
Gln Gln Cys Ala Val Pro Glu Lys Gln Asp Ile Met Lys Lys Leu Lys
                85                  90                  95

Glu Ile Ala Phe Pro Arg Thr Asp Glu Leu Lys Asn Asp Leu Leu Lys
            100                 105                 110

Lys Tyr Asn Val Glu Tyr Gln Glu Tyr Leu Gln Ser Lys Asn Lys Tyr
        115                 120                 125

Lys Ala Glu Ile Leu Lys Lys Leu Glu His Gln Arg Leu Ile Glu Ala
    130                 135                 140

Glu Arg Lys Arg Ile Ala Gln Met Arg Gln Gln Gln Leu Glu Ser Glu
145                 150                 155                 160

Gln Phe Leu Phe Phe Glu Asp Gln Leu Lys Lys Gln Glu Leu Ala Arg
                165                 170                 175

Gly Gln Met Arg Ser Gln Gln Thr Ser Gly Leu Ser Glu Gln Ile Asp
            180                 185                 190

Gly Ser Ala Leu Ser Cys Phe Ser Thr His Gln Asn Asn Ser Leu Leu
        195                 200                 205

Asn Val Phe Ala Asp Gln Pro Asn Lys Ser Asp Ala Thr Asn Tyr Ala
    210                 215                 220

Ser His Ser Pro Pro Val Asn Arg Ala Leu Thr Pro Ala Ala Thr Leu
225                 230                 235                 240

Ser Ala Val Gln Asn Leu Val Val Glu Gly Leu Arg Cys Val Val Leu
                245                 250                 255

Pro Glu Asp Leu Cys His Lys Phe Leu Gln Leu Ala Glu Ser Asn Thr
            260                 265                 270

Val Arg Gly Ile Glu Thr Cys Gly Ile Leu Cys Gly Lys Leu Thr His
        275                 280                 285

Asn Glu Phe Thr Ile Thr His Val Ile Val Pro Lys Gln Ser Ala Gly
    290                 295                 300

Pro Asp Tyr Cys Asp Met Glu Asn Val Glu Glu Leu Phe Asn Val Gln
305                 310                 315                 320
```

```
Asp Gln His Asp Leu Leu Thr Leu Gly Trp Ile His Thr His Pro Thr
                325                 330                 335

Gln Thr Ala Phe Leu Ser Ser Val Asp Leu His Thr His Cys Ser Tyr
            340                 345                 350

Gln Leu Met Leu Pro Glu Ala Ile Ala Ile Val Cys Ser Pro Lys His
        355                 360                 365

Lys Asp Thr Gly Ile Phe Arg Leu Thr Asn Ala Gly Met Leu Glu Val
    370                 375                 380

Ser Ala Cys Lys Lys Lys Gly Phe His Pro His Thr Lys Glu Pro Arg
385                 390                 395                 400

Leu Phe Ser Ile Cys Lys His Val Leu Val Lys Asp Ile Lys Ile Ile
                405                 410                 415

Val Leu Asp Leu Arg
            420
```

<210> 6
<211> 461
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Asp Gln Pro Phe Thr Val Asn Ser Leu Lys Lys Leu Ala Ala Met
1               5                   10                  15

Pro Asp His Thr Asp Val Ser Leu Ser Pro Glu Glu Arg Val Arg Ala
            20                  25                  30

Leu Ser Lys Leu Gly Cys Asn Ile Thr Ile Ser Glu Asp Ile Thr Pro
        35                  40                  45

Arg Arg Tyr Phe Arg Ser Gly Val Glu Met Glu Arg Met Ala Ser Val
    50                  55                  60

Tyr Leu Glu Glu Gly Asn Leu Glu Asn Ala Phe Val Leu Tyr Asn Lys
65                  70                  75                  80

Phe Ile Thr Leu Phe Val Glu Lys Leu Pro Asn His Arg Asp Tyr Gln
                85                  90                  95

Gln Cys Ala Val Pro Glu Lys Gln Asp Ile Met Lys Lys Leu Lys Glu
```

```
            100                 105                 110

Ile Ala Phe Pro Arg Thr Asp Glu Leu Lys Asn Asp Leu Leu Lys Lys
        115                 120                 125

Tyr Asn Val Glu Tyr Gln Glu Tyr Leu Gln Ser Lys Asn Lys Tyr Lys
    130                 135                 140

Ala Glu Ile Leu Lys Lys Leu Glu His Gln Arg Leu Ile Glu Ala Glu
145                 150                 155                 160

Arg Lys Arg Ile Ala Gln Met Arg Gln Gln Gln Leu Glu Ser Glu Gln
                165                 170                 175

Phe Leu Phe Phe Glu Asp Gln Leu Lys Lys Gln Glu Leu Ala Arg Gly
            180                 185                 190

Gln Met Arg Ser Gln Gln Thr Ser Gly Leu Ser Glu Gln Ile Asp Gly
        195                 200                 205

Ser Ala Leu Ser Cys Phe Ser Thr His Gln Asn Asn Ser Leu Leu Asn
    210                 215                 220

Val Phe Ala Asp Gln Pro Asn Lys Ser Asp Ala Thr Asn Tyr Ala Ser
225                 230                 235                 240

His Ser Pro Pro Val Asn Arg Ala Leu Thr Pro Ala Ala Thr Leu Ser
                245                 250                 255

Ala Val Gln Asn Leu Val Val Glu Gly Leu Arg Cys Val Val Leu Pro
            260                 265                 270

Glu Asp Leu Cys His Lys Phe Leu Gln Leu Ala Glu Ser Asn Thr Val
        275                 280                 285

Arg Gly Ile Glu Thr Cys Gly Ile Leu Cys Gly Lys Leu Thr His Asn
    290                 295                 300

Glu Phe Thr Ile Thr His Val Ile Val Pro Lys Gln Ser Ala Gly Pro
305                 310                 315                 320

Asp Tyr Cys Asp Met Glu Asn Val Glu Glu Leu Phe Asn Val Gln Asp
                325                 330                 335

Gln His Asp Leu Leu Thr Leu Gly Trp Ile His Thr His Pro Thr Gln
            340                 345                 350
```

Thr Ala Phe Leu Ser Ser Val Asp Leu His Thr His Cys Ser Tyr Gln
355 360 365

Leu Met Leu Pro Glu Ala Ile Ala Ile Val Cys Ser Pro Lys His Lys
370 375 380

Asp Thr Gly Ile Phe Arg Leu Thr Asn Ala Gly Met Leu Glu Val Ser
385 390 395 400

Ala Cys Lys Lys Lys Gly Phe His Pro His Thr Lys Glu Pro Arg Leu
405 410 415

Phe Ser Ile Gln Lys Phe Leu Ser Gly Ile Ile Ser Gly Thr Ala Leu
420 425 430

Glu Met Glu Pro Leu Lys Ile Gly Tyr Gly Pro Asn Gly Phe Pro Leu
435 440 445

Leu Gly Ile Ser Arg Ser Ser Ser Pro Ser Glu Gln Leu
450 455 460

<210> 7
<211> 424
<212> PRT
<213> Homo sapiens

<400> 7

Met Ser Asp His Gly Asp Val Ser Leu Pro Pro Glu Asp Arg Val Arg
1 5 10 15

Ala Leu Ser Gln Leu Gly Ser Ala Val Glu Val Asn Glu Asp Ile Pro
20 25 30

Pro Arg Arg Tyr Phe Arg Ser Gly Val Glu Ile Ile Arg Met Ala Ser
35 40 45

Ile Tyr Ser Glu Glu Gly Asn Ile Glu His Ala Phe Ile Leu Tyr Asn
50 55 60

Lys Tyr Ile Thr Leu Phe Ile Glu Lys Leu Pro Lys His Arg Asp Tyr
65 70 75 80

Lys Ser Ala Val Ile Pro Glu Lys Lys Asp Thr Val Lys Lys Leu Lys
85 90 95

```
Glu Ile Ala Phe Pro Lys Ala Glu Glu Leu Lys Ala Glu Leu Leu Lys
            100                 105                 110

Arg Tyr Thr Lys Glu Tyr Thr Glu Tyr Asn Glu Glu Lys Lys Lys Glu
        115                 120                 125

Ala Glu Glu Leu Ala Arg Asn Met Ala Ile Gln Gln Glu Leu Glu Lys
    130                 135                 140

Glu Lys Gln Arg Val Ala Gln Gln Lys Gln Gln Gln Leu Glu Gln Glu
145                 150                 155                 160

Gln Phe His Ala Phe Glu Glu Met Ile Arg Asn Gln Glu Leu Glu Lys
                165                 170                 175

Glu Arg Leu Lys Ile Val Gln Glu Phe Gly Lys Val Asp Pro Gly Leu
            180                 185                 190

Gly Gly Pro Leu Val Pro Asp Leu Glu Lys Pro Ser Leu Asp Val Phe
        195                 200                 205

Pro Thr Leu Thr Val Ser Ser Ile Gln Pro Ser Asp Cys His Thr Thr
    210                 215                 220

Val Arg Pro Ala Lys Pro Pro Val Val Asp Arg Ser Leu Lys Pro Gly
225                 230                 235                 240

Ala Leu Ser Asn Ser Glu Ser Ile Pro Thr Ile Asp Gly Leu Arg His
                245                 250                 255

Val Val Val Pro Gly Arg Leu Cys Pro Gln Phe Leu Gln Leu Ala Ser
            260                 265                 270

Ala Asn Thr Ala Arg Gly Val Glu Thr Cys Gly Ile Leu Cys Gly Lys
        275                 280                 285

Leu Met Arg Asn Glu Phe Thr Ile Thr His Val Leu Ile Pro Lys Gln
    290                 295                 300

Ser Ala Gly Ser Asp Tyr Cys Asn Thr Glu Asn Glu Glu Glu Leu Phe
305                 310                 315                 320

Leu Ile Gln Asp Gln Gln Gly Leu Ile Thr Leu Gly Trp Ile His Thr
                325                 330                 335

His Pro Thr Gln Thr Ala Phe Leu Ser Ser Val Asp Leu His Thr His
```

```
            340                 345                 350

Cys Ser Tyr Gln Met Met Leu Pro Glu Ser Val Ala Ile Val Cys Ser
        355                 360                 365

Pro Lys Phe Gln Glu Thr Gly Phe Phe Lys Leu Thr Asp His Gly Leu
    370                 375                 380

Glu Glu Ile Ser Ser Cys Arg Gln Lys Gly Phe His Pro His Ser Lys
385                 390                 395                 400

Asp Pro Pro Leu Phe Cys Ser Cys Ser His Val Thr Val Val Asp Arg
                405                 410                 415

Ala Val Thr Ile Thr Asp Leu Arg
            420
```


<210> 8
<211> 58
<212> PRT
<213> Homo sapiens

<400> 8

```
Val Gly Arg Leu Glu Asn Ala Ile Gly Trp Tyr His Ser His Pro Gly
1               5                   10                  15

Tyr Gly Cys Trp Leu Ser Gly Ile Asp Val Ser Thr Gln Met Leu Asn
            20                  25                  30

Gln Gln Phe Gln Glu Pro Phe Val Ala Val Val Ile Asp Pro Thr Arg
        35                  40                  45

Thr Ile Ser Ala Gly Lys Val Asn Leu Gly
    50                  55
```

<210> 9
<211> 58
<212> PRT
<213> Drosophila melanogaster

<400> 9

```
Val Gly Arg Met Glu His Ala Val Gly Trp Tyr His Ser His Pro Gly
1               5                   10                  15

Tyr Gly Cys Trp Leu Ser Gly Ile Asn Val Ser Thr Gln Met Leu Asn
            20                  25                  30
```

Gln Thr Tyr Gln Glu Pro Phe Val Ala Ile Val Val Asp Pro Val Arg
        35   40   45

Thr Val Ser Ala Gly Lys Val Cys Leu Gly
    50   55

<210> 10
<211> 58
<212> PRT
<213> Arabidopsis thaliana

<400> 10

Ala Gly Arg Leu Glu Asn Val Val Gly Trp Tyr His Ser His Pro Gly
1   5   10   15

Tyr Gly Cys Trp Leu Ser Gly Ile Asp Val Ser Thr Gln Arg Leu Asn
            20   25   30

Gln Gln His Gln Glu Pro Phe Leu Ala Val Val Ile Asp Pro Thr Arg
        35   40   45

Thr Val Ser Ala Gly Lys Val Glu Ile Gly
    50   55

<210> 11
<211> 58
<212> PRT
<213> Caenorhabditis elegans

<400> 11

Glu Gly Arg Lys Glu Lys Val Val Gly Trp Tyr His Ser His Pro Gly
1   5   10   15

Tyr Gly Cys Trp Leu Ser Gly Ile Asp Val Ser Thr Gln Thr Leu Asn
            20   25   30

Gln Lys Phe Gln Glu Pro Trp Val Ala Ile Val Ile Asp Pro Leu Arg
        35   40   45

Thr Met Ser Ala Gly Lys Val Asp Ile Gly
    50   55

<210> 12
<211> 58
<212> PRT
<213> Archaeoglobus fulgidus

<400> 12

Leu Pro Ile Gly Met Lys Val Phe Gly Thr Val His Ser His Pro Ser
1   5   10   15

Pro Ser Cys Arg Pro Ser Glu Glu Asp Leu Ser Leu Phe Thr Arg Phe
            20   25   30

Gly Lys Tyr His Ile Ile Val Cys Tyr Pro Tyr Asp Glu Asn Ser Trp
        35   40   45

Lys Cys Tyr Asn Arg Lys Gly Glu Glu Val
    50   55

<210> 13
<211> 58
<212> PRT
<213> Pyrococcus horikoshii

<400> 13

Met Pro His Asp Glu Ser Ile Lys Gly Thr Phe His Ser His Pro Ser
1   5   10   15

Pro Phe Pro Tyr Pro Ser Glu Gly Asp Leu Met Phe Phe Ser Lys Phe
            20   25   30

Gly Gly Ile His Ile Ile Ala Ala Phe Pro Tyr Asp Glu Asp Ser Val
        35   40   45

Lys Ala Phe Asp Ser Glu Gly Arg Glu Val
    50   55

<210> 14
<211> 58
<212> PRT
<213> Thermoplasma volcanium

<400> 14

Lys Pro Ile Asp Phe Ser Leu Val Gly Ser Val His Ser His Pro Ser
1   5   10   15

Gly Ile Thr Lys Pro Ser Asp Glu Asp Leu Arg Met Phe Ser Leu Thr
            20   25   30

Gly Lys Ile His Ile Ile Val Gly Tyr Pro Tyr Asn Leu Lys Asp Tyr
        35   40   45

Ser Ala Tyr Asp Arg Ser Gly Asn Lys Val
    50   55

<210> 15
<211> 58
<212> PRT
<213> Methanobacterium thermoautotrophicum

<400> 15

Leu Pro Pro Phe Thr Gly Ala Val Gly Ser Val His Ser His Pro Gly
1   5   10   15

Pro Val Asn Leu Pro Ser Ala Ala Asp Leu His Phe Phe Ser Lys Asn
            20   25   30

Gly Leu Phe His Leu Ile Ile Ala His Pro Tyr Thr Met Glu Thr Val
        35   40   45

Ala Ala Tyr Thr Arg Asn Gly Asp Pro Val
    50   55

<210> 16
<211> 58
<212> PRT
<213> Aquifex aeolicus

<400> 16

Ile Ser Lys Gly Met Glu Ile Val Gly Val Tyr His Ser His Pro Asp
1   5   10   15

His Pro Asp Arg Pro Ser Gln Phe Asp Leu Gln Arg Ala Phe Pro Asp
            20   25   30

Leu Ser Tyr Ile Ile Phe Ser Val Gln Lys Gly Lys Val Ala Ser Tyr
        35   40   45

Arg Ser Trp Glu Leu Lys Gly Asp Lys Phe
    50   55

<210> 17
<211> 60
<212> PRT
<213> Mycobacterium tuberculosis

<400> 17

Glu Asp Ala Asp Glu Val Pro Val Val Ile Tyr His Ser His Thr Ala
1   5   10   15

Thr Glu Ala Tyr Pro Ser Arg Thr Asp Val Lys Leu Ala Thr Glu Pro
            20   25   30

Asp Ala His Tyr Val Leu Val Ser Thr Arg Asp Pro His Arg His Glu
35 40 45

Leu Arg Ser Tyr Arg Ile Val Asp Gly Ala Val Thr
50 55 60

<210> 18
<211> 58
<212> PRT
<213> Escherichia coli

<400> 18

Ile Lys Ile Asn Ala Ser Ala Leu Ile Leu Ala His Asn His Pro Ser
1 5 10 15

Gly Cys Ala Glu Pro Ser Lys Ala Asp Lys Leu Ile Thr Glu Arg Ile
20 25 30

Ile Lys Ser Cys Gln Phe Met Asp Leu Arg Val Leu Asp His Ile Val
35 40 45

Ile Gly Arg Gly Glu Tyr Val Ser Phe Ala
50 55

<210> 19
<211> 57
<212> PRT
<213> Drosophila melanogaster

<400> 19

Thr Gly Arg Pro Glu Met Val Val Gly Trp Tyr His Ser His Pro Gly
1 5 10 15

Phe Gly Cys Trp Leu Ser Gly Val Asp Ile Asn Thr Gln Gln Ser Phe
20 25 30

Glu Ala Leu Ser Glu Arg Ala Val Ala Val Val Val Asp Pro Ile Gln
35 40 45

Ser Val Lys Gly Lys Val Val Ile Asp
50 55

<210> 20
<211> 57
<212> PRT
<213> Homo sapiens

<400> 20

```
Thr Gly Arg Pro Glu Met Val Val Gly Trp Tyr His Ser His Pro Gly
1               5                   10                  15

Phe Gly Cys Trp Leu Ser Gly Val Asp Ile Asn Thr Gln Gln Ser Phe
            20                  25                  30

Glu Ala Leu Ser Glu Arg Ala Val Ala Val Val Val Asp Pro Ile Gln
        35                  40                  45

Ser Val Lys Gly Lys Val Val Ile Asp
    50                  55
```

<210> 21
<211> 57
<212> PRT
<213> Dictyostelium discoideum

<400> 21

```
Thr Gly Arg Asp Glu Ile Val Ile Gly Trp Tyr His Ser His Pro Gly
1               5                   10                  15

Phe Gly Cys Trp Leu Ser Ser Val Asp Val Asn Thr Gln Gln Ser Phe
            20                  25                  30

Glu Gln Leu Gln Ser Arg Ala Val Ala Val Val Val Asp Pro Leu Gln
        35                  40                  45

Ser Val Arg Gly Lys Val Val Ile Asp
    50                  55
```

<210> 22
<211> 57
<212> PRT
<213> Saccharomyces cerevisiae

<400> 22

```
Thr Gly Arg Asp Gln Met Val Val Gly Trp Tyr His Ser His Pro Gly
1               5                   10                  15

Phe Gly Cys Trp Leu Ser Ser Val Asp Val Asn Thr Gln Lys Ser Phe
            20                  25                  30

Glu Gln Leu Asn Ser Arg Ala Val Ala Val Val Val Asp Pro Ile Gln
        35                  40                  45

Ser Val Lys Gly Lys Val Val Ile Asp
    50                  55
```